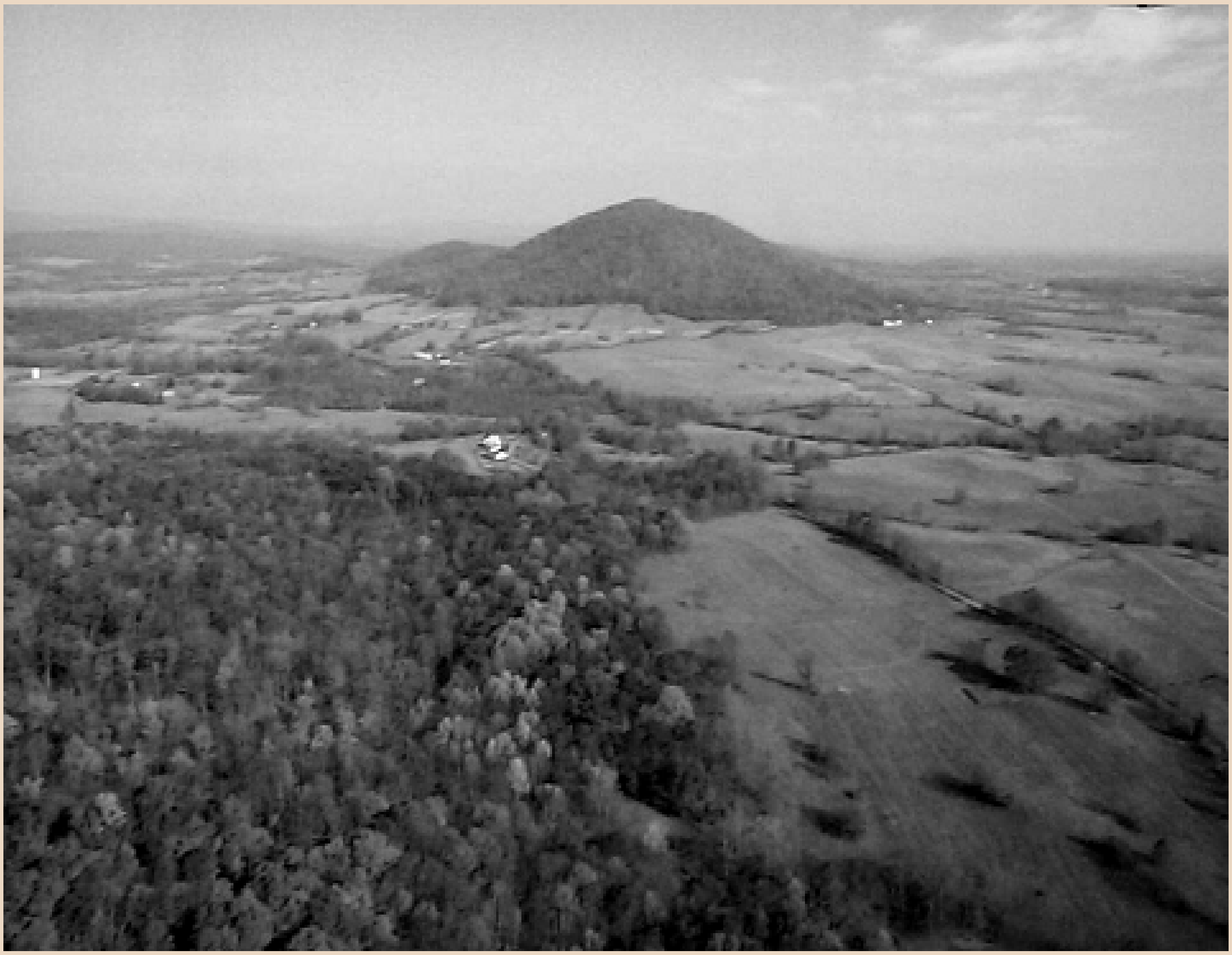
Interpretive Guide to the Soils of Fauquier County, Virginia

5th Edition

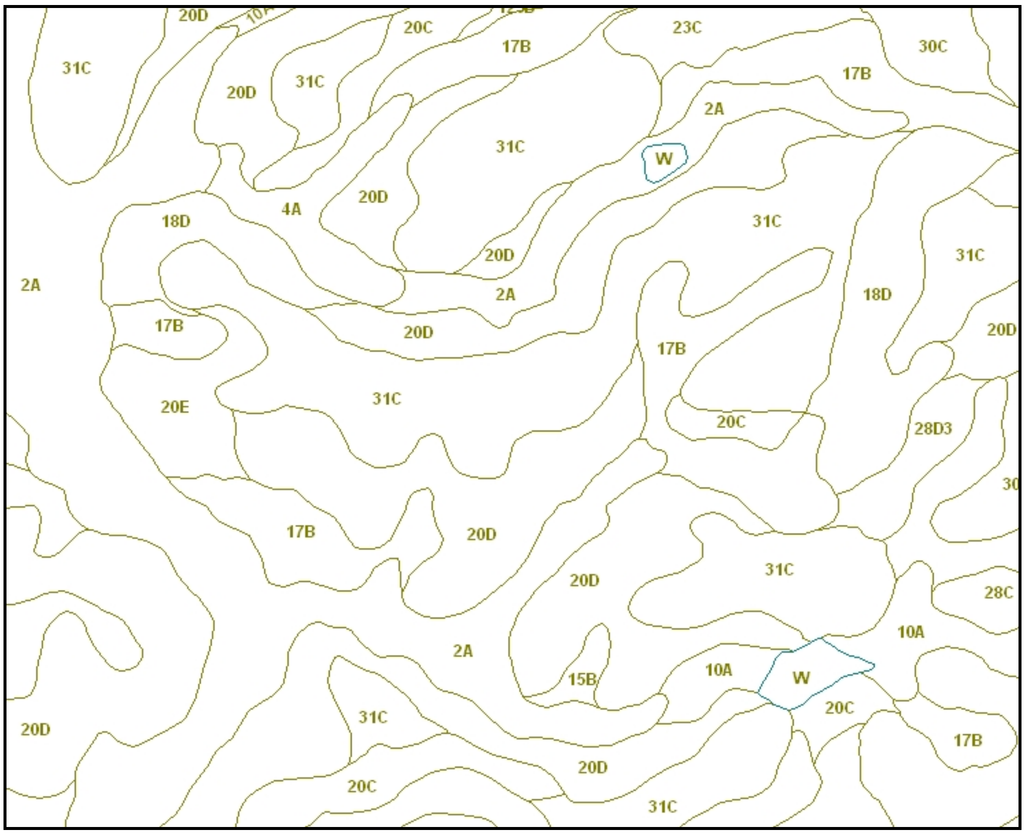


"The history of every nation is eventually written in the way it cares for its soil."

Franklin D. Roosevelt

Department of Community Development
County Soil Scientist Office
Fauquier County, Virginia
2004

INTERPRETIVE GUIDE TO THE SOILS OF FAUQUIER COUNTY, VIRGINIA



County soil survey information to be used
with updated soil maps

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Special Thanks to the Fauquier County Geographic Information System Office for their
Assistance in Updating this Document and the Soil Maps

USE OF INFORMATION IN THIS GUIDE

HOW TO USE THIS INFORMATION

This material is **intended for planning purposes, as well as to alert the reader to the broad range of conditions, problems, and use potentials for each map unit.** A map unit (for example, "73B") is the county-wide sum of all map delineations (all the "73B" areas in the County). For most map units in Fauquier County, the individual series in a map unit name (for example, "Penn" soils in the 73B map units or "Purcellville" soils in the 23B map unit) may account for as little as 50% of the soils actually to be found in the map unit. The map unit potential use rating refers to the overall combination of soil properties and landscape conditions. Therefore, a map unit rated as having good potential for urban uses probably contains some areas that have much poorer potential. Conversely, a map unit rated as having poor potential for a designated use may contain areas with good potential for that use. In on-site investigations, work is completed with much greater detail and inclusions of good or problem soils are specifically identified.

The information in this guide will enable the user to determine the distribution and extent of various types of soil and the kinds of problems which may be anticipated.

HOW <u>NOT</u> TO USE THIS INFORMATION

The information in this guide is **not** intended for use in determining **specific** use or suitability of soils for a particular site. It is of utmost importance that the reader understands that the information is geared to **map unit potential** and not to **specific site suitability**. An intensive on-site evaluation should be made to verify the soils map and determine the soil/site suitability for the specific use of the parcel.

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INTRODUCTION

Soil Survey Information

The County Soil Scientist Office completed updating the 1956 Published Soil Survey to a rectified topographic base of 1 inch = 400 feet in 1998. This grid system and scale matches the Fauquier County Tax maps.

The original Soil Survey for Fauquier County was conducted in 1942-1944 by seven soil scientists working for the United States Department of Agriculture and the Virginia Agricultural Experiment Station. These maps were made by walking over the landscapes, boring auger holes where different soils were anticipated and drawing the soil lines on 1937 aerial photos which were at a scale of 1 inch = 1,320 feet. An experienced soil scientist could map 200 to 300 acres per day. These soil maps were published in 1956 at 1 inch = 1,760 feet. The maps were produced primarily for agricultural use and great emphasis was placed on surface features that affected tillage.

By the late 1980's, all available copies of the 1956 publication had been distributed. At the same time, the County was developing its Geographic Information System (GIS) and a need for updated soil information was prevalent. The first soils layer for the GIS was completed by using the 1956 published soil map (1 inch = 1,760 feet) and refitting the soil maps to the current Tax Map (1 inch = 400 feet). Since these soil maps had not been adjusted to fit the topography of the land (rectified), they had to be stretched to fit the County Tax Map base as well as possible. This first GIS soil layer consisted of soil line boundaries and labels. Many features that were on the original soil maps were not transferred to the GIS, (e.g. rock outcrops, springs, drainageways, cemeteries, schools, churches, etc.)

In a move to further update the GIS soil layer, the County Soil Scientist Office was established in 1989. Evaluations determined that the semi-corrected soil lines on the first layer would need to be adjusted to a rectified topographic base. (This made the adjusted soil lines more accurate in that the ridgetop soils were positioned on the ridges and drainageway soils fit the proper landscape position.)

Now that the updated soil survey maps are complete, they are the best available soils information for individual parcels. Copies of the updated soils maps, which overlay the County Tax Map, are available through the Fauquier County GIS Office or on-line at www.fauquiercounty.gov. Along with the County Soil Interpretive Guide, a landowner or potential buyer can obtain information on what soil types exist on parcels and discover any limitations there may be for a proposed use.

The updated soil survey report is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and homeowners can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper waste disposal. Conservationists can use the survey to help them understand, protect, and enhance the environment.

This interpretive guide used with the County Soil Survey Maps is the best available information to date. Use of the 1956 Soil survey publication is not recommended and will not be accepted as soils data for proposed projects being submitted to the Department of Community Development.

This soil survey information is for planning purposes only. It is intended to alert the reader to the broad range of conditions, problems, and the soil potential for each map unit. Before any land use decisions occur, urban or agricultural, it is highly recommended that the updated soil map be consulted. Realizing the limitations of this soil map, the County Soil Scientist Office is providing a service, for a reasonable fee, that will offer much more detailed soils and cultural information to the land use decision maker. This service entails using the updated soil map as a base in conjunction with the latest aerial and topographic data to field map the different soil types and cultural features at 1 inch = 400 feet.

The Type I Soil Mapping service will provide the greatest benefit if obtained before any type of urban or agricultural practices are planned. This would include subdivision of land (including administrative lots), industrial or commercial uses, and farm plans for special agricultural uses.

It is **NOT** intended for use in determining specific use or suitability of soils for a particular site. Soil Surveys do not take the place of an on-site engineering study, a lot-by-lot evaluation for septic tank drainfield areas or other on-site special use needs. It is, however, to be considered as an over all land-use planning tool. The County Soil Survey will continually be updated as Type I Soil Maps are completed for specific parcels.

GEOLOGIC SETTING

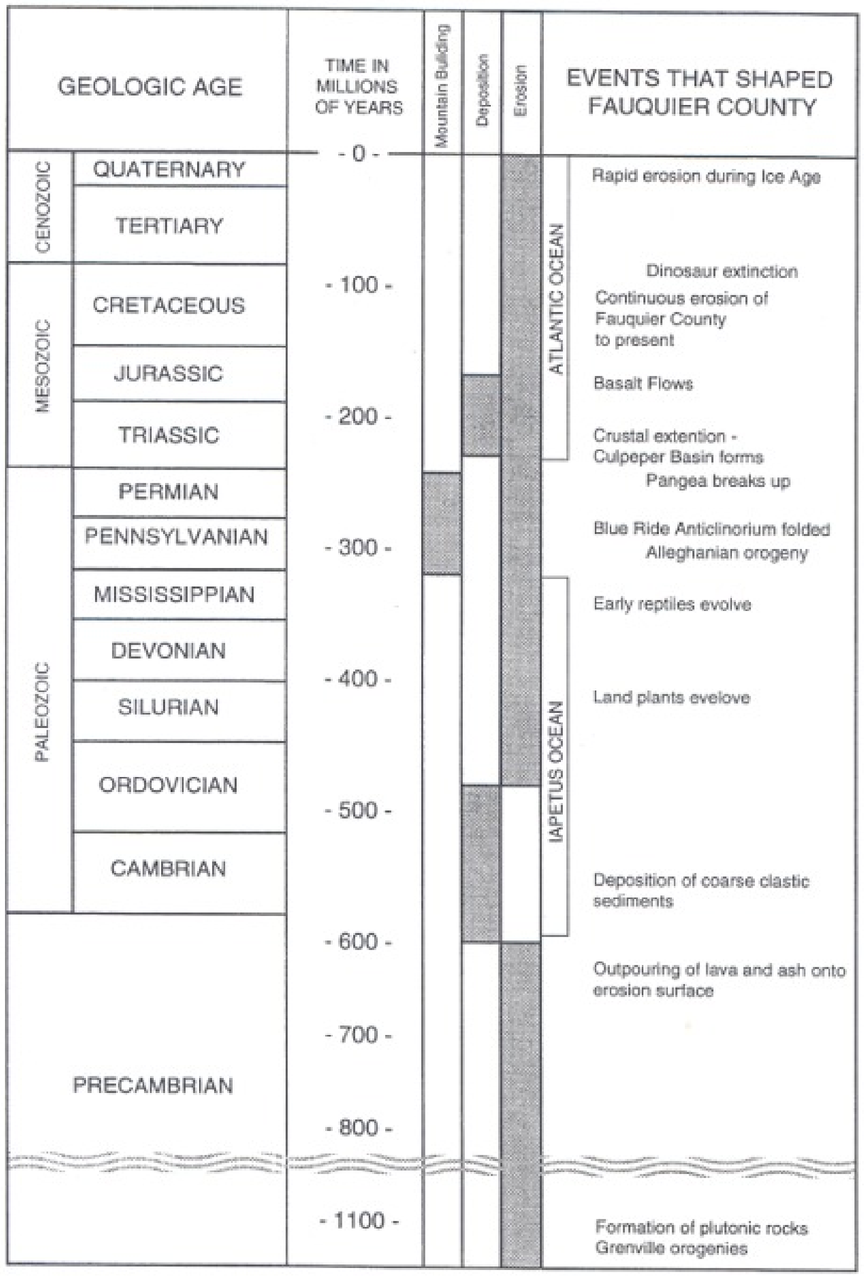
Fauquier County covers a geologically diverse area that manifests itself in a variety of unique and scenic landforms. An understanding of the geology of the County is vital to its continued economic prosperity and well-managed development. For example, study of the underlying geology is necessary to determine site suitability for septic systems as well as the need for slope stabilization.

Soils, in particular, derive their characteristics from local geological and climatological conditions. Depending on its particular characteristics and mineral composition, soil type will determine what crops will grow best as well as site suitability for various densities of land development. The type, permeability and porosity of the underlying rock also govern the availability and quality of groundwater.

The geology of the County has evolved over a long period of time, primarily through the geologic processes of plate tectonics and erosion. In brief, the North American Plate, of which Fauquier County belongs, has for hundreds of years collided with, separated from, and slid past other tectonic plates. Each time two or more plates collide, volcanic activity results and large rock formation are thrust and folded over one another. The resulting mountain forming process is referred to as an orogeny. After a time, collided plates or previously contiguous plates may rip apart and an ocean forms between them. More volcanic activity then takes place, filling shallow seas and covering the land with volcanic ash and debris and intruding surrounding rock with magma. During separation, jumbled slivers of the colliding continents are left as a testament to the collision. As volcanic activity subsides, the erosive processes of water and wind take hold and shape the landscape, forming river valleys, creating alluvial fans, and filling in low lying areas. Table 2.1 presents a geologic timeline for the formation of present day Fauquier County along with the associated events that helped shape it.

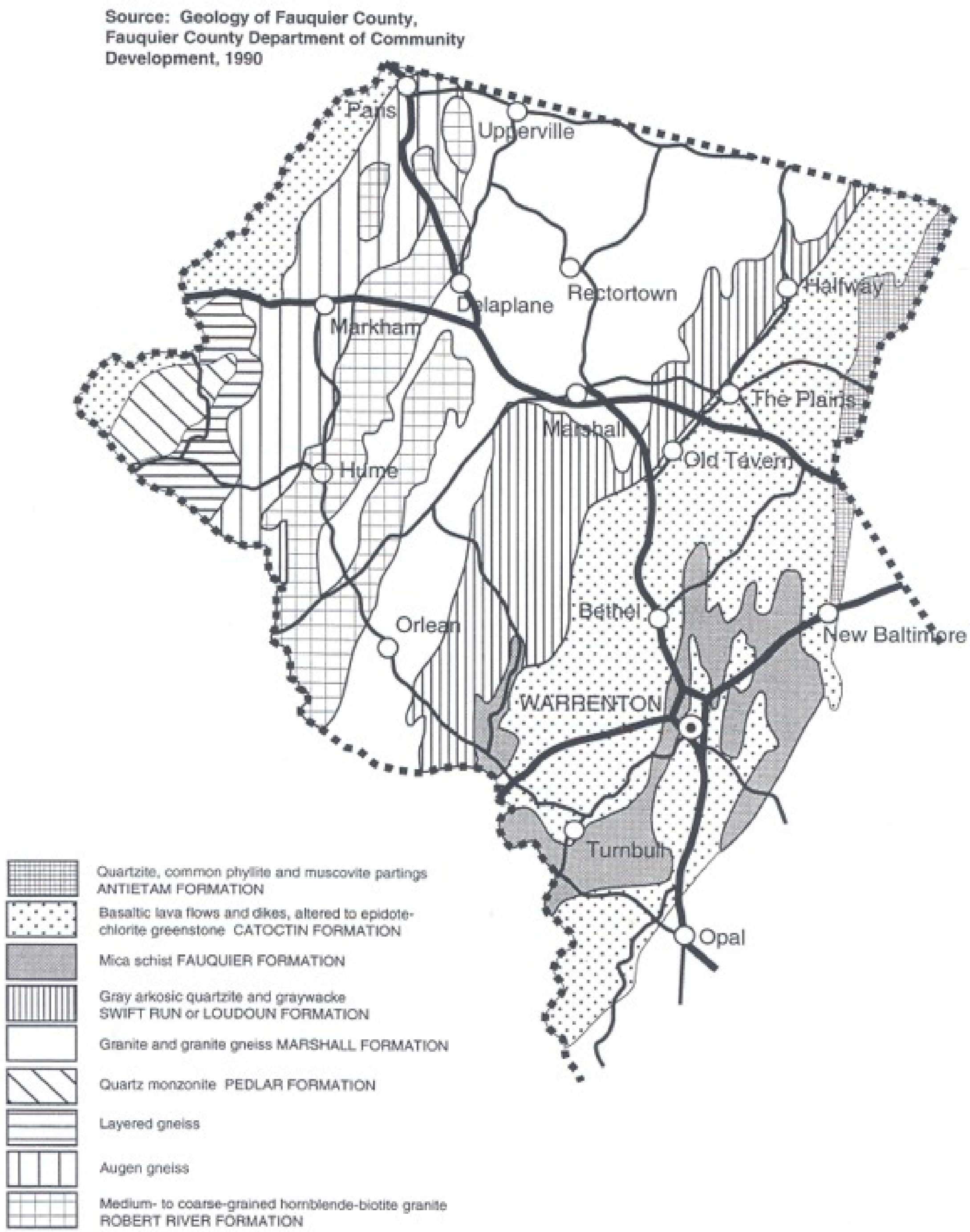
The County is divided into three geological provinces: the Blue Ridge Anticlinorium, the Culpeper Triassic Basin, and the Southern Piedmont Province. The Blue Ridge runs from the Blue Ridge Mountains to Pond Mountain and Baldwin Ridge. To the east of the Blue Ridge lies the Culpeper Triassic Basin. East of the Culpeper Triassic Basin lies the deeply weathered, rolling lands of the Piedmont Province. Each geologic formation has a unique geological history and has a distinctive landscape signature. Each area also consists of a different assortment of rocks and minerals, which are valuable resources to the County. Maps 2.2A, 2.2B, and 2.2C present a geological picture of the County which is divided between the geological provinces and their constituent formations.

Table 2.1: Geologic Time Line and Events Shaping Fauquier County

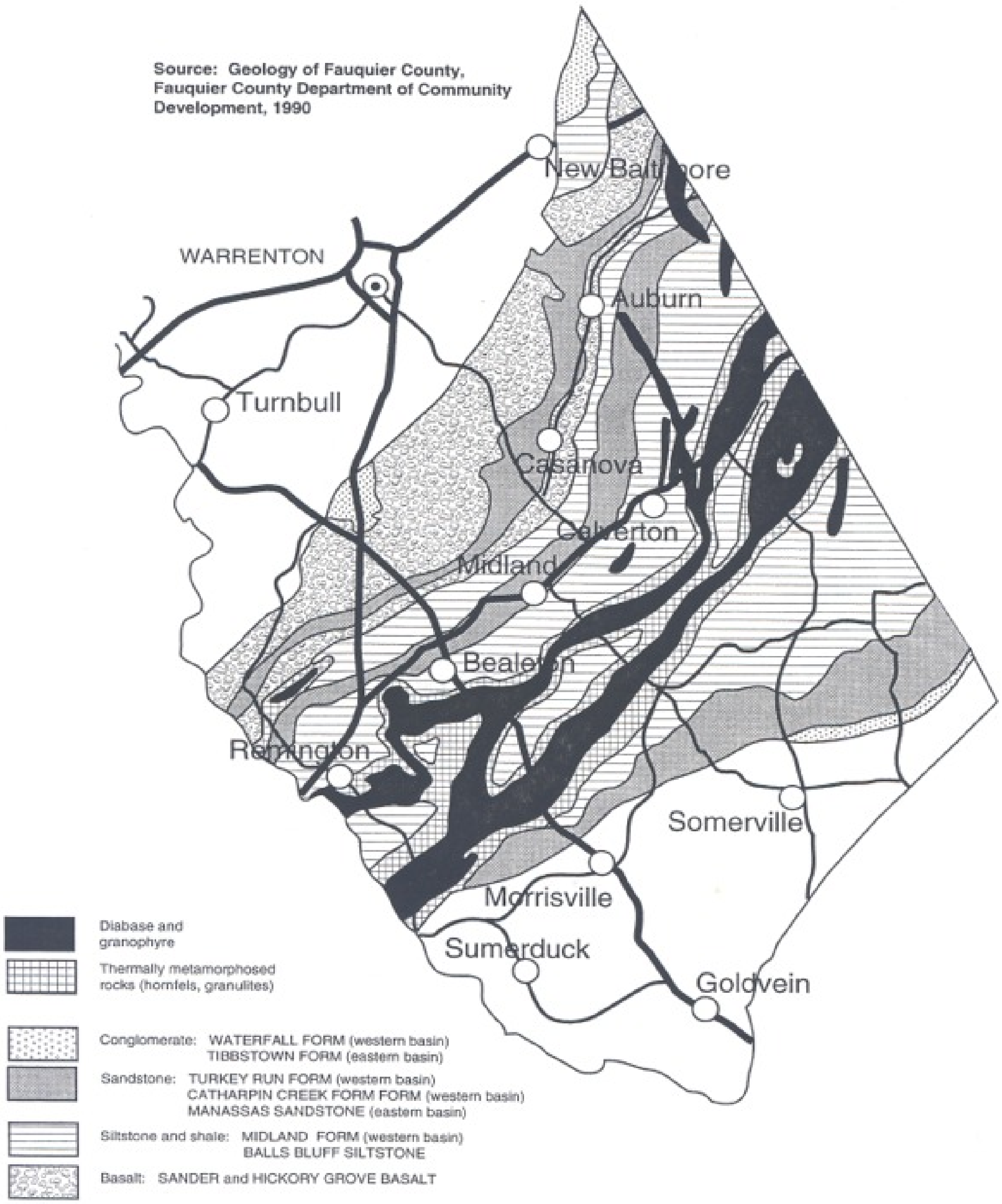


Source: "Geology of Fauquier County," Richard S. Joslyn, Fauquier Department of Community Development, August, 1990

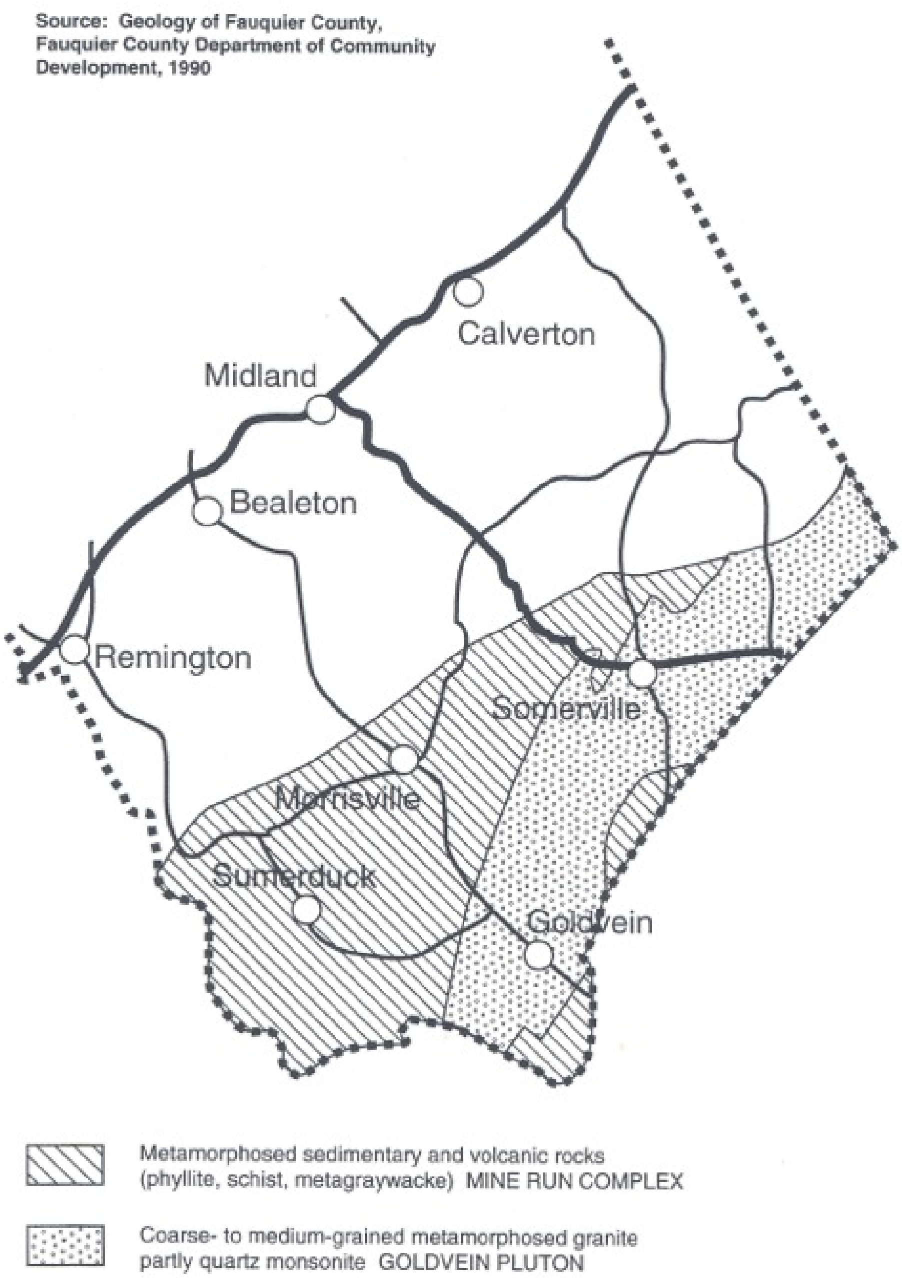
Map 2.2A: General Geology Map: Blue Ridge Anticlinorium



Map 2.2B: General Geology Map: Culpeper Basin



Map 2.2C: General Geology Map: Piedmont Province



MAP UNIT POTENTIAL

Soil properties and landscape features unique to a particular map unit can be used to describe that map unit's potential for certain generalized uses. The map unit potential ratings are used to indicate general information on soil and site properties for a single map unit.

The County Soil Scientists have developed map unit potential ratings and class criteria for the following generalized uses:

- General development using central water and sewer
- General development using septic tank drainfields
- Agriculture
- Forestry

These four map unit potential ratings allow for the comparison of the relative compatibility among a group of soil and site properties and a group of similar uses.

This guide contains use potentials for the four group names above, including definition of potential classes and problems associated with each class. Additionally, it defines the criteria for hydrologic soil groups for use in stormwater runoff calculations, and for hydric soils for use in wetland determinations.

This information is provided for use in conceptual planning and review, and as an organizational guide for site-specific investigations. The chief objective of map unit potential ratings for soils is to maximize the effective use of soil maps to spotlight potential soil problems for a variety of proposed uses.

This guide is interim and tentative in nature. As Type I Soil Maps are completed on specific parcels, the more detailed mapping will update that portion of the County Soil Survey Map, although it will not become a part of the official soil survey of the county. Due to more detailed information, new map units will be developed and added to the mapping legend when necessary. Additional soil information may be obtained from the County Soil Scientist.

MAP UNIT POTENTIAL FOR GENERAL DEVELOPMENT USING CENTRAL WATER AND CENTRAL SEWER

In this generalized land use, soil-map units were rated based on their effect on major engineering operations during land development projects. These include, but are not limited to, roads, foundations, basements, building slabs, shallow excavation, use of soil as controlled fill material, and erosion/sediment control.

GOOD POTENTIAL

These map units have soil and site properties generally considered good for general development on central water and sewer.

FAIR POTENTIAL

These map units have soil-related problems that can generally be corrected at low cost and effort.

Major problems in utilization of these map units are 1) the erodibility of the soil, and 2) the large quantity of earthwork required to land-level the high amount of relief. When they occur along major drainageways, filling and land disturbance provides the potential for serious erosion and sedimentation problems.

POOR POTENTIAL

These map units have major soil-related problems, many difficult to correct, requiring engineering solutions which may not always be satisfactory.

Serious erosion and sedimentation are major problems. Often, these map units occur too close to flowing streams to allow for adequate erosion and sedimentation control if the slopes are denuded. Much of the bedrock underlying these map units is fairly massive and may require substantial blasting during excavation. Many map units have essentially no soil material available for grading and/or landscaping and adequate vegetative restabilization is difficult. For most units, adequate bearing capacity can be obtained for individual houses in underlying rock material. If fill pads are used, adequate measures should be taken to remove boulders and large stones and to properly key the fill material into the residual material to prevent potential slippage problems. Soil material with low rock fragment content should be stockpiled for final grading.

Some map units have soils with low strength (high silt content), prolonged seasonal perched water tables, and high frost heave potential. Adequate bearing capacity can be obtained on underlying rock materials, usually at depths ranging from 30-50" below the surface. Drainage should be provided under slabs and around foundation. In some cases, underdrainage is desirable for roads. Frost heave problems can be avoided by using conventionally required footing depths.

VERY POOR POTENTIAL

These map units have serious soil-related problems, some not correctable, and others requiring extensive and costly engineering solutions which may be unsatisfactory.

Map units with high shrink-swell clayey subsoils are very difficult to grade, do not respond to tile drainage, cause foundation placed in subsoils to crack, and cause roads/pavements to break up and fail prematurely. In addition to the plasticity problems, there are also perched water tables above the clay pan. Plastic soil materials should be undercut and disposed of from any potential roadway. They should not be used as backfill (material against basement or foundation walls) or as fill under slabs. Surface drainage and underdrainage should be provided for structures and roads.

Map units with intermittent high water tables, which occur along small drainageways and concave uplands, are difficult to drain due to clayey subsoils and low relief. Basements constructed in these soils are generally wet and/or periodically flooded. These soils are very unstable when wet and have very low bearing capacities.

Map units which have stones and rock outcrops that occupy more than 35% of the soil surface may require considerable blasting for roads and foundations. Stones and boulders make compaction and fine grading difficult unless removed from fill materials under roads and houses. Removal of float rock more than 10" in diameter from soil material is difficult and costly, particularly in more plastic soils found in eastern Fauquier. Soil materials containing large stone should not be used as backfill over pipes or against foundation walls.

Map units on steep slopes are generally very shallow to rock. Any grading disturbance necessitates the placement of potentially unstable fills for building purposes and brings about serious erosion and sedimentation problems.

Where development is proposed on any map unit rated VERY POOR, a geotechnical study should be prepared to assess the soil conditions and make recommendations for design.

MAP UNIT POTENTIAL FOR INDIVIDUAL SEPTIC TANK DRAINFIELD SEWAGE DISPOSAL SYSTEMS

In this generalized land use, soil map units were rated based on the evaluation criteria for subsurface waste disposal and treatment systems found in the Sewage Handling and Disposal Regulations of the Virginia Department of Health. Judgements on specific sites for septic drainfields are deferred to the Fauquier County Health Department, who has sole responsibility for issuance or denial of permits.

GOOD POTENTIAL

These map units have a combination of soil and landscape properties that are most suitable for drainfield sites.

MARGINAL POTENTIAL

These map units have some favorable and some unfavorable soil and landscape properties. Conditions affecting use as drainfield sites are highly variable and predictability is low. Often these map units have soils which require additional soil studies, such as perculation tests, for consideration before permit action.

POOR POTENTIAL

These map units have questionable and unfavorable soil properties and/or landscape positions. Predictability within map units is fairly accurate, although a satisfactory site may be found on map unit inclusions (soils outside the norm describe for the unit). The majorities of these map units are moderately deep soils over shale or crystalline rock, or are moderately well to somewhat poorly drained soils on nearly level uplands.

NOT SUITED

These map units have soil and/or landscape features that are generally considered unsuited for satisfactory drainfield use. These map units have highly accurate predictability. These map units include somewhat poorly to poorly drained colluviual soils (in swales and depressions), floodplains, soils with plastic shrink-swell (expanding clay) subsoils, and soils on greater than 25% slopes or very shallow to rock.

PROPORTIONATE EXTENT OF FAUQUIER COUNTY RATED FOR SEPTIC DRAINFIELDS

Good Potential	5.3%
Marginal Potential	23.0%
Poor Potential	45.8%
Not Suited	25.9%

MAP UNIT POTENTIAL FOR AGRICULTURE

In this generalized land use, soil map units were rated for agriculture. The classes, defined below, indicate the most conservative use, although certainly not the sole use. Local conditions may strongly impact the use potential of an individual map unit.

PRIME CROPLAND

These map units have a combination of soil and landscape properties that make them highly suited for use as cropland. They have characteristics that require only basic conservation practices and short rotations. The soils in these map units generally have high inherent fertility, good water holding capacity, deep effective rooting zones, and are not subject to periodic flooding. This class also has good potential for use in grassland agriculture, forestry, and wildlife habitat.

SECONDARY CROPLAND

Map units in this class have soil properties or a combination of soil and site properties that limit their yield potential to marginal levels when used as cropland. Soils in these map units are best used in rotations including grassland agriculture. Some map units may require intensive conservation practices (such as tile drainage, diversions, surface water management, or strip cropping). Major features and properties include seasonal perched water tables, restrictive layers limiting rooting zones, stones which limit water holding capacity, tillage, seedbed preparation, and harvesting. This class also has good potential for use in grassland agriculture, forestry, or as wildlife habitat.

PRIME PASTURE

These map units are best suited for use as hay and pasture in grassland agriculture. Included in this class are map units with shallow soils, marginally steep slopes, and soils with drainage conditions not conducive to cropping. This class also has good potential for use in forestry or as wildlife habitat.

SECONDARY PASTURE

Map units in this class have soil properties or a combination of soil and site properties that limit their use as hay fields. Soils in this map unit are best used as permanent pasture. Major features and properties include steep slopes, large amount of stones and boulders, and seasonal high water tables, all of which affect use of mowing equipment. This class also has good potential for use in forestry or as wildlife habitat.

NOT SUITED

This class includes map units on very steep slopes, very shallow soils, substantial rock outcrop, or prolonged high water tables. The lands in these map units are best left undisturbed in their natural wooded environment for use in timber production and wildlife habitat due to difficulty of maintenance of grasslands. Many of these map units, particularly those on very steep slopes, are considered to be critical environmental areas as stream buffers. Other areas include very steep mountainside slopes and very wet landscapes. Although some map units within this class have been cleared, their best use is in woodland and as wildlife habitat.

PROPORTIONATE EXTENT OF FAUQUIER COUNTY RATED FOR AGRICULTURE

Prime Cropland	10.8%
Secondary Cropland	34.2%
Prime Pasture	13.1%
Secondary Pasture	27.2%
Not Suited	14.7%

MAP UNIT POTENTIAL FOR FORESTRY

The management of trees begins with an understanding of the soil on which they grow or are to be grown. Some soils are very productive in growing wood crops; others may barely support tree cover. Different tree species may vary in production on the same soil. The probability of seeding survival, the relative danger of erosion when cover is removed, the resistance of trees to windthrow, and problems with equipment use during harvesting are some of the management items that can be inferred from soils information. Soil maps may be extremely useful in preparing pre-harvest plans, in applying erosion control methods, measures or practices while harvesting and regenerating forests in Fauquier County.

In this generalized land use, soil map units were rated for their potential productivity under hardwood and pine forest types. Ratings were based on representative site indices.

For further information about species suitability and woodland management practices, contact the County Forester, Virginia Department of Forestry.

<u>PROPORTIONATE EXTENT OF FAUQUIER COUNTY RATED FOR FORESTRY</u>

	Hardwood	Pine
Low Productivity	22.6%	0
Moderately Low Productivity	28.4%	0
Moderate Productivity	19.5%	27.4%
Moderately High Productivity	10.6%	6.4%
High Productivity	10.0%	52.7%
Very High Productivity	8.9%	13.5%

LAND USE CAPABILITY CLASSES

Land capability classification shows the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

Capability classes are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class **I** soils have slight limitations that restrict their use.
- Class **II** soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices
- Class **III** soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both
- Class **IV** soils have very severe limitations that reduce the choice of plants or that require special conservation practices, or both
- Class **V** soils have are not likely to erode but have other limitations, impractical to remove, that limit their use
- Class **VI** soils have severe limitations that make them generally unsuitable for cultivation
- Class **VII** soils have very severe limitations that make them unsuitable for cultivation
- Class **VIII** soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production

EROSION AND SEDIMENT CONTROL

Many of the soils of Fauquier County are highly erodible. Soils occurring on moderate to steep slopes are especially subject to erosion. It is very important that the presence of highly erodible soils be confirmed early, prior to any land disturbing activities. A thorough knowledge of the soils involved is essential to successful planning for erosion and sediment control. Highly erodible soils may not be considered in developing standard erosion and sedimentation control plans.

Soils containing high percentages of silts, fine sands, and mica have the highest erosion hazard. As the clay and organic matter content increases, the erosion hazard decreases because clay act as a binder for soil particles. Once clays are eroded, however, they are easily transported by runoff.

Erosion hazard ratings were developed for each soil-map unit, based on an adaptation of the Universal Soil Loss Equation under construction site conditions. The primary topographic considerations are slope steepness and slope length. Because of the effect of accumulated runoff, erosion potential is greater on long, steep slopes. The ratings are defined as:

0-7%	Slight erosion hazard
7-15%	Moderate erosion hazard
15-25%	High erosion hazard
>25%	Very high erosion hazard

Within these slope gradient ranges, the erosion hazard will become critical if the slope exceeds the following criteria:

0-7%	300 feet
7-15%	150 feet
>15%	75 feet

Hydrologic soil group classes are used in determining soil-land use conditions for estimating runoff in the Virginia Erosion and Sediment Control Handbook. The hydrologic class (A, B, C or D, listed below) is an indicator of the minimum rate of infiltration obtained for a bare soil after prolonged wetting. By using the hydrologic classification and the associated land use, runoff curve numbers can be selected. Runoff curve numbers are used for determining peak discharge and total volume of surface water runoff for given conditions.

- **A - Low Runoff Potential:** Soils having a high infiltration rate, even when thoroughly wetted, and consisting chiefly of deep, well to excessively drained sands or gravels.

- **B - Moderately Low Runoff Potential:** Soils having a moderate infiltration rate when thoroughly wetted, and consisting chiefly of moderately well to well drained soils with moderately fine to moderately coarse texture.

- **C - Moderately High Runoff Potential:** Soils having a slow infiltration rate when thoroughly wetted, and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture.

- **D - High Runoff Potential:** Soils having a very slow infiltration rate when thoroughly wetted, and consisting of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay layer at or near the surface, and shallow soils over nearly impervious material.

HYDRIC SOILS

Wetlands are protected by various state laws and at the federal level by Section 404 of the Clean Water Act. Wetlands are defined as "those areas that are inundated or saturated by groundwater of a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Federal Register, Vol. 42, p. 37128)". The U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency (EPA) are responsible for making determinations of wetlands regulated under the Clean Water Act. A permit must be obtained from the USACE in many cases where construction is planned in wetlands.

Wetlands can occur in a wide range of conditions in Fauquier County; from bottomland forests that seem dry most of the year to permanent standing water. Hydric soils and wooded wetlands are mostly concentrated along or near streams. Scattered wet depressions in cleared fields, usually at low places or formed from spring seeps also are common. Swamps created by beaver dams are also included. Red maple, sycamore and other water-tolerant hardwoods dominate in bottomland forests. Scattered emergent (rushes, sedges, cattails) vegetation occurs in cleared fields and forest openings.

There are three basic criteria that must be met for an area to be classified as a wetland: 1.) hydric soils, 2.) hydrophytic (water-tolerant) plant species, and 3.) wetland hydrology.

- ❒ First, the area in question (size is NOT a consideration) must occur on a hydric soil or on that part of a non-hydric soil that is a hydric inclusion. A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic (oxygen deficient) conditions in the upper part (Soil Conservation Service, 1987). Such soils usually support hydrophytic plants. If it is not a hydric soil, it can not be classified as a wetland.

The hydric soils shown on the Type I Soil Maps give a good indication of the extent and probability of wetlands. However, their presence on the soil map does not automatically mean that the site is a jurisdictional (USACE, EPA) wetland. Field identification should be undertaken to confirm the presence of wetlands. Further information on wetland delineation may be obtained from the County Soil Scientist.

The current hydric soils in the county are listed below:

- **4A** Hatboro silt loam; frequently flooded
- **6A** Bowmansville silt loam; frequently flooded
- **69A** Elbert silt loam
- **79A** Albano silt loam
- **110A** Mongle Variant silt loam
- **179A** Albano Variant silt loam
- **269A** Meetze very gravelly silt loam

The following soil map units may have hydric soil inclusions:

- **2A** Codorus loam, frequently flooded
- **5A** Rowland silt loam, frequently flooded
- **8A** Codorus Variant loam, frequently flooded
- **9A** Mongle loam, very stony
- **9B** Mongle loam, very stony
- **10A** Mongle loam
- **10B** Mongle loam
- **11A** Rohrersville loam, stony
- **12A** Rohrersville loam
- **13A** Sumerduck loam
- **13B** Sumerduck loam

- **14A** Sowego loam
- **14B** Sowego loam
- **14C** Sowego loam
- **15A** Seneca loam
- **15B** Seneca loam
- **15C** Seneca loam
- **16A** Meadowville silt loam
- **16B** Meadowville silt loam
- **16C** Meadowville silt loam
- **17A** Middleburg loam
- **17B** Middleburg loam
- **17C** Middleburg loam
- **38A** Swampoodle loam
- **38B** Swampoodle loam
- **59B** Mongle loam, rubbly
- **59C** Mongle loam, rubbly
- **62A** Sycoline silt loam
- **62B** Sycoline silt loam
- **63A** Kelly silt loam
- **63B** Kelly Variant silt loam
- **63C** Kelly Variant silt loam
- **67A** Jackland and Haymarket silt loams
- **67B** Jackland and Haymarket silt loams
- **68B** Jackland and Haymarket silt loams, very stony
- **70A** Mount Lucas loam
- **78A** Dulles silt loam
- **82B** Scattersville loam, stony
- **82C** Scattersville loam, stony
- **93A** Delanco loam
- **93B** Delanco loam
- **116B** Meadowville silt loam, very stony
- **116C** Meadowville silt loam, very stony
- **117B** Middleburg loam, very stony
- **117C** Middleburg loam, very stony
- **170A** Mount Lucas Variant loam
- **170B** Mount Lucas Variant loam
- **178A** Dulles Variant silt loam
- **178B** Dulles Variant silt loam
- **238A** Belvoir loam
- **238B** Belvoir loam
- **238C** Belvoir loam
- **270B** Mount Lucas loam
- **370B** Mount Lucas loam, extremely stony
- **413B** Lignum Variant silt loam
- **413C** Lignum Variant silt loam
- **438A** Swampoodle Variant loam
- **438B** Swampoodle Variant loam
- **493A** Delanco Variant loam

GLOSSARY OF TERMS USED IN THIS GUIDE

Alluvium	Sand, silt, clay, etc., deposited on land by flowing water.
Clay Pan	A dense, compacted layer in the subsoil having a much higher clay content than the overlaying material, from which it is separated by a sharply-defined boundary; formed by downward movement of clay or by synthesis of clay in place during soil formation. Clay pans are usually hard when dry, and very plastic and sticky when wet. Clays usually have high shrink-swell potential. Clay pans usually impede the downward movement of water and air, and the growth of plant roots.
Coarse Fragments	Rock or mineral particles greater than 2.0 mm in diameter, such as stones, gravels, or cobbles:

Rounded or Angular Fragments

Gravel	2mm - 3” diameter
Cobbles	3 - 10” diameter
Stones	10” - 2’ diameter
Boulders	2’ - 10’ diameter

Flat on One Side or One Dimension Much Less Than The Other

Channers	2mm - 6” long
Flagstone	6 - 15” long
Stones	15” - 2’ long
Boulders	more than 2’ long

Colluvium	A deposit of rock fragments and soil material accumulated at the base of steep slopes as a result of gravitational action.
Depth (Soil)	Refers to depth below surface to a restrictive layer. This may be a fragipan, rock, or other material that roots cannot penetrate. Roots further than 4” apart, center to center, are not considered substantial penetration.

Very shallow	0 - 10” depth
Shallow	10 - 20” depth
Moderately Deep	20 - 40” depth
Deep	40 - 60” depth
Very Deep	more than 60” depth

Drainage (Soil)	An interpreted characteristic of a soil which is a function of slope runoff and permeability. Soil drainage classes used:

Well Drained	No indication of restricted drainage to 60”or more.
Moderately Well Drained	Depth to restricted drainage or water table 18-40” below surface.
Somewhat Poorly Drained	Depth to restricted drainage or water table 6-18” below surface.
Poorly Drained	Depth to restricted drainage or water table 0-6” below surface.

Erosion (Soil)	The wearing away of the land surface by running water, wind, ice, or other geologic agent; classes recognized are:

Normal	Less than 25” of the surface soil has been removed.
Eroded	25-75% of the surface soil has been removed. May contain gullies.
Severely Eroded	More than 75 percent of the soil surface has been removed. Usually many gullies occur.

Floodplain	That area along streams or drainageways that floods during heavy rainstorms.
Flooding Frequency	None – less than one time in 500 years Very rare – more than once in 500 years but less than once in 100 years Rare – one to five times in 100 years Occasional – 5 to 50 times in 100 years Frequent – greater than 50 times in 100 years
Fragipan	A natural subsurface horizon with high bulk density relative to the solum above; seeming cemented when dry, but when moist showing a moderate to weak brittleness.
Hydric Soil	A soil that is saturated, flooded, or ponded long enough to be conducive for the formation of wetlands.
K Factor	An erodibility factor (K) used in the universal Soil Loss Equation to determine soil loss from an area over a period of time due to splash, sheet, and rill erosion. K Factors in Fauquier County range from 0.10 (lowest erodibility) to 0.43 (highest erodibility). Cohesiveness of soil particles varies with different layers of the same soil, causing varying K

factors for different layers of the same soil, and varying degrees of erodibility for a given site.

Map Delineation	A single area on a soil map depicted by soil boundary lines.
Map Unit	The collective of all soil map delineations of the same type (i.e., 73B) for a survey area (County). Map units may contain one or more soils which may vary considerably in their characteristics and use potential.
Mottles	Patches of soil color different from the matrix color
Parent Material	The material from which the soil has been formed or from which the soil is capable of being formed.
Permeability (Soil)	Permeability is the rate of flow of water through a unit cross-section of saturated soil in a unit of time, under specific temperature and hydraulic conditions. Classes of soil permeability:

Very Slow	less than 0.06" per hour
Slow	0.06-0.2" per hour
Moderately Slow	0.2-0.6" per hour
Moderate	0.6-2.0" per hour
Moderately Rapid	2.0-6.0" per hour
Rapid	6.0-20" per hour
Very Rapid	more than 20" per hour

Ponding Frequency	None – less than one time in 500 years Very rare – more than once in 500 years but less than once in 100 years Rare – one to five times in 100 years Occasional – 5 to 50 times in 100 years Frequent – greater than 50 times in 100 years
Redoximorphic features	Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.
Relief	The difference in elevation between the high and low points in a land surface.
Residuum	Unconsolidated and partially weathered mineral materials accumulated by disintegration of consolidated rock in place.
River or Stream Terrace	A landscape position on which the soils formed in alluvial sediments and with subsequent down-cutting by the stream, the landscape is presently well above floodplain level.
Site Index	The height to which a tree will grow in a "normal" stand in usual competition, but not overcrowded, at an age of 50 years. The higher the site index, the more productive the soil.

Slope	The angle at which land surfaces deviate from the horizontal, normally expressed in percentage. Slope classes are

0 - 2%	Nearly level
2 - 7%	Gently sloping
7 - 15%	Strongly sloping
15 - 25%	Moderately steep
25 – 45%	Steep
45 – 65%	Very steep

Surface	Topsoil.
Subsoil	Subsurface layer in which maximum clay occurs.
Substratum	The zone of weathered rock material or other weathered parent material below the surface and subsoil, above hard rock.
Texture (Soil)	The relative percentage of various soil separates (sand, silt, and clay), modified by coarse fragments where present.
Triassic	Term that designates a geologic age (approximately 200 million years ago) and consisting mainly of sedimentary rocks of conglomerate, sandstone and silt stones that have been intruded by igneous rocks such as diabase and basalt. The Culpeper Basin (of Triassic age) is also referred to as the Piedmont Lowland.
Water Table	The level below which the soil pores and rock crevices are filled with water. Permanent water tables are commonly used as a source of water in wells. Perched water tables are seasonal and are caused by impermeable layers over which water builds up during wet seasons.

SUMMARY TABLE OF SOIL CHARACTERISTICS AND USE POTENTIAL

The following table is a summary of soil characteristics as related to the potential suitability for various uses and the major problems associated with each kind of soil. This table arranges the soils numerically. **The number/letter combinations (i.e. 56D) on the soil map represent the soil map units.** Note that these data are brief and highlights only the main characteristics and problems.

This table is arranged in seven columns. The first column lists the map unit symbol, the soil name, and range in slope. The second column briefly characterizes the soil represented by the map symbol. The third column lists the erosion hazard for unprotected soil, the K factor for the surface and subsoil, and the soil hydrologic group. For map units that are a complex of two soil series, the K factors and hydrologic groups are provided for both soils. The first listed is for the first soil series named in the complex; the second, fir the second soil named in the complex. For example, in the map unit 60B Ott – Catlett complex, 0.37, 0.32 – 0.20, 0.15, C – D the 0.37, 0.32 and C characterize the Ott series, while 0.20, 0.15 and D characterize the Catlett series. The next four columns rate the soil potentials into GOOD, FAIR, POOR and VERY POOR categories and tell the major problems for that particular use. These ratings do not take the place of an on-site engineering study but are beneficial in planning further studies. The last column rates the Land Use Capability of the soil.